INDIAN DRAGONFLIES

BY

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Part XXXVI

(*With seven text-figures*)

(*Continued from page 107 of Volume XXXIV*).

Genus LESTES, *Addenda*.

[1] **Lestes patricia** Fraser

Lestes patricia Fras. *Rec. Ind. Mus.* vol. xxvi, p. 486 (1924).

Male. (Female unknown.) Hindwing 24 mm. Abdomen 37 mm.

Head: Labium greyish; labrum, genæ, epistome, and frons azure blue; vertex and occiput matt black; eyes deep azure blue above, turquoise blue beneath (fading to olivaceous brown after death).

Prothorax greenish-blue laterally, matt black above.

Thorax bluish-green on the dorsum and laterally, pale greenish-white beneath. Dorsum marked with a broad stripe of matt black extending out to about halfway between the dorsal carina and humeral suture and with straight borders. Laterally the upper portion of the area between the humeral and postero-lateral sutures greyish-green, whilst beneath are two pairs of black spots partly obscured by pruinescence.

Legs bluish outwardly, reddish on flexor surfaces, black on the extensor; femoral spines short, tibial long. (About 11 spines on the femora.)

Wings hyaline, palely enfumed, this especially noticeable with the wings superposed; pterostigma dark brown, about four times as long as broad; 14 postnodal nervures in forewings, 10 in the hind; discoidal cells equal; *ac* situated midway between the antenodal nervures.

Abdomen bluish-green marked with matt black on segments 1 and 2, and from segments 6 to 10; segments 3 to 5 warm brown dorsally, non-metallic. All segments with a broad dorsal stripe which dilates apicad but does not extend quite to base of segments; segment 1 with its basal half only black, 2 with a mid-dorsal stripe slightly dilated apicad, 7 with the dorsal stripe gradually widening apicad, whilst segments 8 to 10 are entirely black, the last two being somewhat pruinosed dorsally.

Anal appendages.—Superiors black with the inner dilatation white, this latter rather broad and with a robust black tooth at its base; apical ends turned in abruptly at nearly a right angle and with a few small spines on the outer border. Inferiors very short, digitate, extending nearly to the end of expanded part of superiors, apices naked, obtuse, black.

Distribution.—Coorg only. The type insect is the only specimen known and is in the author's collection. It was found lurking in bushes beside a small pond near Virajpet, on the Sidapur road. It bears a superficial appearance to *C. pulcherrima* and is easily distinguished from other Indian species of *Lestes* by the single mid-dorsal black band with straight borders.

(The description of this species should follow directly after that of *L. viridula*, Part xxxiv, vol. xxxiii of this Journal.)

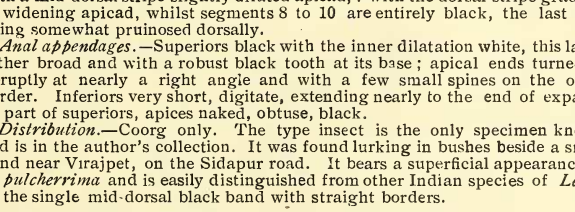

FIG. 1. Forewing of *Burmargiolestes melanothorax* (Selys.)

Subfamily MEGAPODAGRIONINAE.

Podagrion Selys, *nom. preoc.*, Syn. Agrion. Bull. Acad. Belg. (2) xiv. p. 12 (1862) ; Id. Mém. Cour. xxxviii, p. 40 (1836).

Dragonflies of medium size, usually of more robust build than the average Cœnagrionine, body colouring non-metallic, resting with wings widely or partly spread. Wings with a long petiole, narrow, hyaline, discoidal cell elongate, moderately narrow, variably acutely angulated distad ; sectors of arc arising from lower half of arc ; *R3* arising far distad of node ; origins of *IR3* and *R4+5* variable ; *Cu2* arched slightly costalwards at its origin ; no oblique vein present between *R3* and *IR3* ; pterostigma variable, usually slightly more than twice as long as broad ; intercalated sectors present in most, especially at apical area of wings, these sectors giving a pectinated effect to *IA* and *MA* in some species ; anal bridge vestigial or complete. Abdomen long and slender or moderately long and robust, especially in the females. Superior anal appendages of male usually more or less forcipate ; inferiors vestigial.

Genitalia. Lobe usually depressed, hamules large and prominent, penis with the end curled over its stem and ending in two long, more or less curled branches which embrace the stem, lobe tumid, more or less pyriform. Vulvar scales very robust and extending well beyond end of abdomen. Larvæ unknown.

Distribution. Only three genera are known from within Indian limits, beyond which the subfamily extends throughout the tropics, neotropics, Australasia and the Philippines.

The three Indian genera stand somewhat isolated in the fauna, each being represented by a single species within our limits and all confined to the north-east districts and Burma. *Burmargiolestes melanothorax* Selys, which

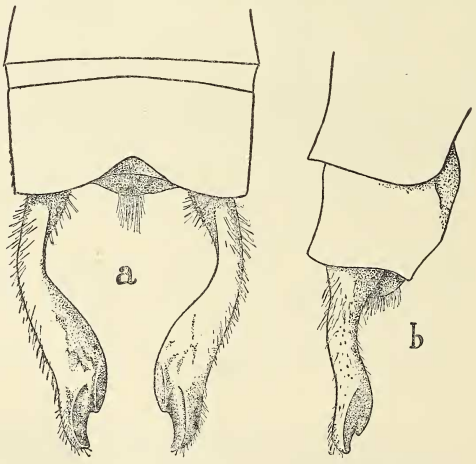

Fig. 2. Anal appendages of *Burmargiolestes melanothorax*. (Selys).
a. Dorsal view. *b*. Profile view.

was formerly included under genus *Argiolestes* has since been placed in a genus of its own, so that the distribution of this species is no longer anomalous. A Rhinagrion which I had incorrectly placed as *M. tibetana* turns out to be a

large race of *R. mima* Karsch, the distribution of this species now extending from Borneo to Burma. Lastly *Mesopodagrion*, as represented by *tibetana* Macl., still remains a monotypic genus, confined, so far as known, to Thibet and Southeast China.

Genus Burmargiolestes Kennedy (1925).

Burmargiolestes Kennedy, Bull. Mus. Comp. Zool. Havard, lxvii, No. 7. p. 296. Pl. fig. 6. (1925).

Wings long and narrow, petiolated nearly to level of distal end of discoidal cell and far distad of *Ac*; node situated at less than one-third the distance from base of wing to pterostigma; *Ac* situated almost opposite the basal antenodal nervure; *Ab* vestigial, only a trace of its distal end present; discoidal cell acute at distal end, its costal side about two-thirds the length of postcostal, these two sides diverging slightly and the outer side oblique; *IR2* arising about 3 cells distad of the origin of *R3*; *R3* arising slightly nearer the node than pterostigma; *IR3* arising 1 cell distad of the subnode; *R4+5* arising at the subnode; *MA* and *IA* pectinate. (This pectination being an expression of intercalated sectors between *R4+5* and *MA*, and *Cu2* and *IA*); intercalated sectors also present between *IR2* and *R3* and between *IR3* and *R4+5* at apical ends of wings; only a single row of cells between *IA* and hinder border of wings; pterostigma elongate, at least twice as long as broad, slightly dilated at the middle, both inner and outer ends oblique, unbraced, covering less than 2 cells.

Head narrow; epistome rather prominent. Prothorax with posterior lobe subbilobate; thorax robust; legs rather short, tibiæ not dilated, claw-hooks situated near end of claws. Abdomen long and slender, slightly dilated at base and anal ends. Superior anal appendages nearly twice the length of segment 10, forcipate; inferior appendages vestigial. Genitalia: hamules broad, subquadrate plates; penis broad at apex and slightly notched, curling up over the stem, its branches embracing that structure and spiral-like at the ends; lobe of penis flask-shaped, tumid. Vulvar scale robust, extending slightly beyond end of abdomen. Genotype—*B. melanothorax* (Selys).

Distribution.—South Asia and the eastern Himalayan tracts.

Burmargiolestes melanothorax (Selys)

Argiolestes melanothorax Selys, Bull. Acad. Belg. (2) xiv. p. 38 (1862); Id. Mém. Cour. xxxviii. p. 80 (1880); Id. Ann. Mus. Civ. Genov. series 2. x. p. 500 (1891); Laid. Rec. Ind. Mus. vol. xiii, pp. 323-325 (1917); Kirby, Cat. Odon. p. 125 (1890).

Burmargiolestes melanothorax Kennedy, Bull. Mus. Comp. Havard, ixvii, No. 7. p. 296, Pl. fig. 6 (1925).

Male. Abdomen 40 mm. Hindwing 28 mm.

Head: labium brown; labrum pale blue; bases of mandibles and genae black; epistome, frons and basal joints of antennæ pale blue; vertex and occiput black; eyes olivaceous brown.

Prothorax black with a broad subdorsal pale brown fascia on each side. Thorax glossy black, the upper ends of humeral and lateral sutures pale yellowish brown.

Wings hyaline; pterostigma dark reddish brown to almost black; 23 postnodal nervures to forewings, 21 in the hind.

Legs yellow, the tarsi and spines ferruginous, the distal ends of femora with a diffuse spot of dark brown on the extensor surface.

Abdomen glossy black or blackish brown in subteneral specimens, segments 3 to 6 with an obscure yellowish spot or annule near the base. Anal appendages blackish brown; superiors twice the length of segment 10, forcipate, slightly tumid at base, then subcylindrical and finally compressed at the apex where they are dilated and broadly notched and hollowed out on the inner surface, and present a flattened facet just proximal to the notch; outer borders finely spined, broadly sinuous; inner border of base minutely tuberculate and spined. Inferiors not visible from above, rounded, vestigial plates.

Female. Abdomen 34 mm. Hindwing 29 mm.

Very similar to the male but of more robust and shorter build. Differs as follows,—labium brownish black; black of vertex encroaches on frons which

has two punctate black points ; eyes darker brown ; abdomen with sides paler and the dorsum of segments 8 and 9 yellowish brown ; segment 10 pruinosed white in adults ; anal appendages conical, pointed, as long as segment 10 ; vulvar scales brown, robust, minutely spined below.

Wings palely suffused with brown in adults especially at apices which may be quite dark brown along extreme borders ; pterostigma shorter and broader, often imperfectly braced, covering 2 to 2½ cells ; 29 postnodal nervures in forewings, 21 in the hind ; *Ac*, especially in the forewings, often slightly proximad to the level of the basal antenodal nervure.

Distribution. Upper Burma, Sikkim and Assam. The species from Siam and Tonkin appears to be quite distinct. The discoidal cell in this species is much shorter than in typical *Argiolestes*, the proportion of its costal and subcostal sides is quite different, the nervure *Ac* lies much more basad, whilst the origins of *IR3* and *R4+5* differ entirely from what is found in that genus ; important differences are also found in the genitalia.

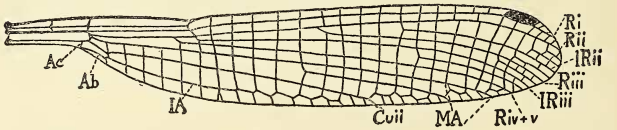

Fig. 3. Forewing of *Rhinagrion mima* (Karsch.)

Genus Rhinagrion Calvert (1913).

Amphilestes Selys, Bull. Acad. Belg. (2) xiv. p. 42 (1867) ; Id. Mém. Cour. xxxviii, p. 92 (1885). *nom. preoc.* ; Kirby, Cat. Odon. p. 126 (1890).

Rhinagrion Calv. *nov. nom.* (*Amphilestes*) Proc. Acad. Phil, 65, p. 258. (1913).

Wings long and narrow, petiolated to the level of *Ac* ; node situated at slightly less than one-third the distance from base to pterostigma ; *Ac* situated nearly opposite the level of the distal antenodal nervure, slightly proximad to that structure ; *Ab* complete, meeting *Ac* at border of wing ; discoidal cell subacute at apex, its costal side two-thirds to three-quarters the length of subcostal, these sides diverging distad, outer side rather oblique ; *IR2* arising 4 to 5 cells distad of the origin of *R3* or halfway between the origin of latter and the pterostigma ; *R3* arising in the forewing 5 to 6 cells distad of the node and much nearer latter than pterostigma ; *IR3* arising at the subnode ; *R4+5* arising well before level of subnode ; *MA* and *Cu2* simple ; *IA* zigzagged at its distal half only ; no intercalated sectors except short ones at the apices of wings ; pterostigma elongate, more than twice as long as broad, slightly dilated at its middle, inner and outer ends oblique, only occasionally braced, covering 2 cells.

Head moderately narrow ; epistome not prominent ; occiput deeply concave. Prothorax with a simple rounded and arched posterior lobe ; thorax robust, furnished, in the female, with prominent hooks at the anterior ends of humeral sutures for copulating with the male.

Legs rather short, robust, tibiæ slim, claw-hooks near ends of claws, femoral and tibial spines short, robust, not very numerous. Abdomen long, cylindrical, moderately robust especially in the female, dilated at base and gradually so at anal end. Anal appendages forcipate, nearly twice the length of segment 10, inferiors vestigial. Genitalia : hamules moderately broad quadrate plates, pointed posteriorly ; penis narrow at apex, curling over stem of organ, its branches strongly curled to embrace the stem and shaped like the horns of an ox as seen from the dorsum ; lobe small, inconspicuous, pyriform.

Vulvar scale robust, projecting well beyond end of abdomen, stylets of great length. Genotype,—*R. macrocephala* (Selys)

Distribution. Burma, Borneo, Malaysia and Sumatra.

Rhinagrion mima Karsch

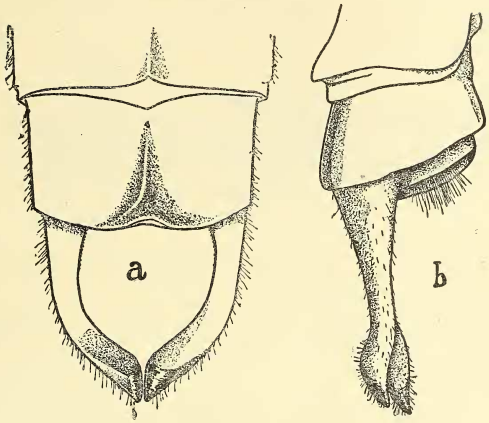

FIG. 4. Anal appendages of *Rhinagrion mima* (Karsch).
a. Dorsal view. *b*. Profile view.

Amphilestes mima Karsch, Ent. Nachr. xvii, pp. 242, 243, (1891) ; Kruger, Stett. Ent. Zeit. p. 100 (1898) ; Laidlaw, Proc. Zool. Soc. Lond. p. 382, 2nd Dec. (1902).
Rhinagrion tibetana Fras. (= *mima*) Rec. Ind. Mus. vol. xxvi (1926).

Male. Abdomen 36 mm. Hindwing 27 mm.

Head black marked with bright ochre or citron yellow ; labium pale straw yellow ; labrum bright ochreous broadly bordered with glossy black ; epistome similar ; bases of mandibles and genae bright yellow ; frons and vertex bright ochreous with a broad median uneven stripe of matt black ; occiput, antennæ and the seat of the latter as well as a small point in front of them matt black ; eyes olivaceous bordered behind by a narrow black band and this latter by another ochreous band equally wide.

Prothorax with an anterior collar, the whole of posterior lobe and a large oval spot on each side bright ochreous, middle lobe and dorsum black.

Thorax velvety black marked with bright yellow or ochreous as follows,—a broad antehumeral stripe not extending to upper and lower part of dorsum, gently curved with the concave sides of the stripes facing one another, the upper halves of the antealar sinus. Laterally bright yellow with a moderately broad median black stripe.

Legs bright ochreous, the flexor surfaces paler yellow, the spines, tarsi, flexor surfaces of tibiæ and the extensor surfaces of the two anterior pairs of femora black.

Wings hyaline, palely enfumed in old adults ; pterostigma black, covering one and a half to two cells ; 13 to 14 postnodal nervures in forewings, 12 in the hind.

Abdomen ferruginous ringed subapicad on segments 2 to 6 with bright ochreous followed by moderately broad black apical rings, segment one paler yellow or greenish-yellow with a narrow apical bordering of black laterally and a finely delineated dorsal marking shaped like the handle of a dagger ; segment 10 with a broad dorsal marking shaped like a cross ; ventral surfaces and ventro-lateral borders of segments 8 to 10 black.

Anal appendages black, the superiors with the apical third bright ferruginous except the extreme apex which is black. Superiors forcipate, curving medialwards to meet at apices, apical halves compressed, the inner surface shallowly concave, apices bevelled within and ending in an acute point. Inferiors rounded, very short, vestigial, not visible from above.

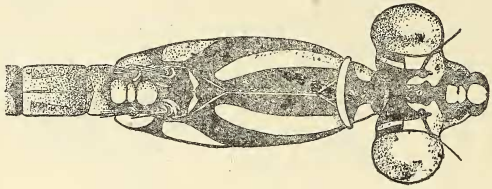

FIG. 5. Markings of head and thorax of *Rhinagrion mima* (Karsch.)

Female. Abdomen 33 mm. Hindwing 29 mm.

Very similar to the male but more robust, differs as follows,—bright markings of head, prothorax and thorax citron yellow, those on the former more restricted, a large irregular spot on the vertex being isolated by the black ; occiput with a narrow dark ferruginous border behind.

Thorax with the black on anterior border of metepimeron reduced to an irregular dark blackish brown stripe incomplete above and below. The anterior part of mid dorsal carina bifurcating to enclose a small triangular space, on either side of which is a large laterally compressed spine ending in a finely pointed hook, the outer part of the spine continued as a shell-like plaque overhanging the posterior lobe of prothorax or sometimes hidden partly by the latter.

Abdomen with segment 1 greenish yellow, the subapical annules on segments 2 to 6 brighter yellow and very conspicuous between the apical black annules and ferruginous of dorsum. On segments 3 to 7 the apical black is continued basad laterally, but slightly so on 3, but as far as the base on segments 6 and 7 on which segments the black also passes basad on the middorsum so as to enclose a spot of the ground colour ; segment 8 black, the middorsum finely, a subapical, subdorsal spot and the ventral border broadly ochreous ; segments 9 and 10 entirely black.

Anal appendages black, short, conical. Vulvar scales and stylets black. Legs with the extensor surfaces of all femora ochreous or ferruginous. Wings with 15 postnodal nervures in the fore, 14 in the hind.

Distribution.—South Shan States, Maymyo, Upper Burma, Sumatra and Malay Peninsula.

A number of both sexes taken by Col. F. Wall, I.M.S., along the borders of a small stream. The species which appears to be locally common, is most closely allied to *R. borneensis* Selys. Col. Wall's specimens which I incorrectly placed as *tibetana* have since been determined as *mima* by a comparison which I have been able to make with specimens in the British Museum. They are considerably larger than type and the markings are more yellow or ochreous than greenish-yellow.

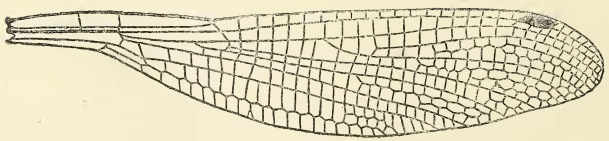

FIG. 6. Forewing of *Mesopodagrion tibetana* (Macl.)

Genus MESOPODAGRION Maclachlan (1896).

Mesopodagrion Macl. Ann. Mag. Nat. Hist. Ser. 6. vol xvii, May (1896).

Wings long and narrow, but moderately dilated about the middle area, petiolated to a little proximad of *Ac*; node situated at a little more than one-third the distance from the base of wing to pterostigma; *Ac* situated at a level slightly nearer the distal antenodal nervure: *Ab* complete, extending a little proximad of *Ac*; discoidal cell more acute than in *Rhinagrion*, its costal border rather less than two-thirds the length of subcostal, outer border very oblique, costal and subcostal sides diverging slightly; *IR2* arising about 3 cells distad of the origin of *R3* and about midway between the node and pterostigma; *R3* arising 6 cells distad of the node in forewing and much nearer node than pterostigma; *IR3* arising at the subnode; *R4+5* arising well before subnode; *MA* and *Cu2* simple; *IA* zigzagged from its origin; 2 rows of cells between *Cu2* and *IA* near their terminations; intercalated sectors between *IR2* and *R3*, between *R3* and *IR3* and between *R4+5* and *MA*; pterostigma elongate, dilated at middle, oblique at outer and inner ends, well braced, covering about 3 cells.

Head moderately narrow; labium deeply cleft, lobes distant, subacute at apex. 2nd joint of antennæ rather longer than the first; epistome not prominent; occiput concave. Prothorax with posterior lobe simple, rounded, arched; thorax robust. Legs robust, rather short, spines of moderate length, not numerous, tibiæ slim, claw-hooks situated at extreme ends of claws. Abdomen robust, cylindrical, moderately short as compared to species of Rhinagrion, dilated somewhat at base and anal end. Anal superior appendages not twice the length of segment 10, forcipate, tapering, acute at apices; inferiors rounded, vestigial. Genitalia: lamina arched; hamules quadrate plates pointed posteriorly; penis narrow at apex but squared and curling strongly over body of organ, its branches embracing the stem and making a complete curl like a ram's horn; lobe small, pyriform, grooved longitudinally. Vulvar scales robust, strongly curved, projecting well beyond end of abdomen. Anal appendages of female conical, acuminate, as long as segment 10. Genotype,—*Mesopodagrion tibetana*. Macl.

Distribution: Thibet and S. W. China.

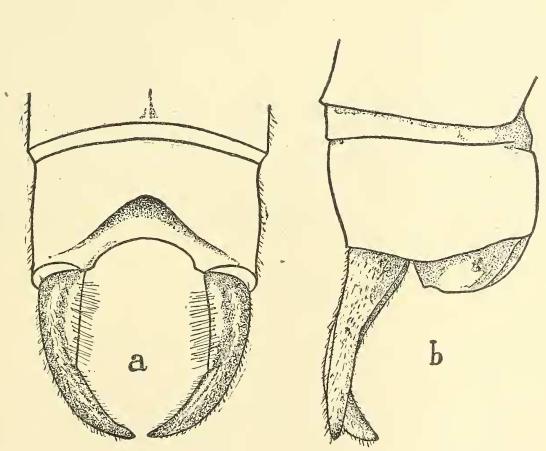

FIG. 7. Anal appendages of *Mesopodagrion tibetana* Macl.
a. Dorsal view. *b*. Profile view.

Mesopodagrion tibetana Macl.

Mesopodagrion tibetana Maclachlan, Ann. Mag. Nat. Hist. Ser. 6. vol. xvii. (1896).

Rhinagrion tibetana Fras. Rec. Ind. Mus. = *Rhinagrion mima* Karsch.

Male. Abdomen 33 mm. Hindwing 30 mm.

Head : labium brownish yellow ; labrum, bases of mandibles and genae greenish yellow ; vertex and occiput matt black with a short oblique line on the outer side of each ocellus, a short line on the posterior border of occiput and a large spot behind each eye yellow.

Prothorax black with a broad greenish-yellow stripe on each side continuous with a similarly coloured antehumeral stripe on thorax.

Thorax black on dorsum, yellow on the sides ; dorsum marked with a pair of slightly curved antehumeral greenish-yellow stripes, the concavity of the stripe facing inwards. Laterally a moderately broad oblique black stripe broadening anteriorly.

Legs black, coxæ and trochanters with yellow spots.

Wings hyaline, palely enfumed and faintly tinted at the bases, pterostigma dark brown to blackish framed in black ; 21 postnodal nervures in forewings, 20 in the hind.

Abdomen glossy black, basal segments clothed with long black hairs, segment 1 broadly yellow at the sides, segment 2 with a pair of parallel yellow stripes along the sides, segments 3 and 4, and in teneral specimens, segments 3 to 7, with a large baso-lateral spot which is confluent with a rather broad lateral greenish-yellow or yellow stripe extending from base nearly to apex but falling short of latter in adult specimens on segments 4 to 7 ; segments 9 and 10 black, the latter with a large lateral yellow spot.

Anal appendages black : superiors forcipate, rather longer than segment 10, subcylindrical at base but compressed nearer apex which is acuminate, whilst on the inner side, near the middle of appendages is a false joint or sulcus, at which point the appendage is slightly but distinctly angulated inwards. Inferiors rounded, vestigial, not visible from above. Genitalia as for genus.

Female. Abdomen 35 mm. Hindwing 34 mm.

Closely similar to the male but the markings more greenish-yellow, and the spot behind the eyes absent or obsolete. The markings on the abdomen similar to those on teneral males, the stripes being continued on to the 3rd and 4th segments, and the basal spots on to the 7th ; segment 9 with a very large lateral yellow spot whilst the 10th is largely yellow on the sides.

Anal appendages as long as segment 10, slightly curved laterally, acuminate, pointed, yellowish at base and separated by a large conical structure as viewed from above. Vulvar scales black, strongly curved. Wings faintly enfumed ; pterostigma as for male (yellowish white in the allotype which however is slightly teneral) ; 21 postnodal nervures in forewings, 19 in the hind.

Distribution : Thibet and south-east China. The type and allotype, in the Maclachlan collection, are from Moupin and Siao-Lon respectively. Recently Mr. Kenneth Morton has received several more specimens from the same district which I have been able to compare with the types. The markings in the latter are definitely apple-green but, so far as the male is concerned, may be blue in the living insect.

(*To be continued.*)